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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09 832,216

04/11/2001

Daun Singh

3460-0103P

9922

2292

7590

05/27/2003

BIRCH STEWART KOLASCH & BIRCH

PO BOX 747

FALLS CHURCH, VA 22040-0747

EXAMINER

I.E. DANG D

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 05/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/832,216

Applicant(s)

SINGH, DAUN

Examiner

Dang D Le

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 2-4 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 12 March 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1 and 5-11 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Taylor.

Regarding claim 1, Wang shows a device for generating a torque (Figures 2 and 3), comprising:

- A hollow central tube (12);
- A pair of endplates (32, 34) mounted on said central tube, such that said pair of endplates are rotatable about said central tube;
- A plurality of elongate members (14) extending between said pair of endplates and radially spaced apart from said central tube, such that said plurality of elongate members are rotatable about said central tube along with said pair of endplates; and

- At least one wire loop (16) made from a shape memory effect material wound about said central tube and each of said plurality of elongate members, said wire having been trained in accordance with shape memory effect principles to asymmetrically deform when locally heated, each of said wire loops being oriented so said asymmetric deformation occurs in the same direction (Figure 2).

Wang does not show said wire having been trained in accordance with shape memory effect principles to asymmetrically deform by extending one side of the wire loop laterally in a direction away from the other side of the wire loop when locally heated.

Taylor shows a wire having been trained in accordance with shape memory effect principles to asymmetrically deform by extending one side of the wire loop laterally (Figure 10) in a direction away from the other side of the wire loop when locally heated for the purpose of making a thermal engine.

Since Wang and Taylor are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to extend one side of the wire loop laterally in a direction away from the other side of the wire loop as taught by Taylor for the purpose discussed above.

Regarding claim 5, it is noted that Wang and Taylor also show an engine comprising:

- A central tube (12);
- A pair of endplates (32, 34) mounted on said central tube;
- At least one elongated member (14) extending between said pair of endplates;
- At least one wire loop (16) around the central tube and said elongated member, said wire loop including a shape memory effect material and having been trained in accordance with shape memory effect principles to asymmetrically deform by extending one side of the wire loop laterally (Figure 10, Taylor) in a direction away from the other side of the wire loop when locally heated.

Regarding claim 6, it is noted that Wang also shows the central tube being hollow.

Regarding claim 7, it is noted that Wang also shows the endplates being rotatable about the central tube.

Regarding claim 8, it is noted that Wang also shows the wire having been trained in accordance with shape memory effect principles to asymmetrically deform when locally heated, each of said wire loops being oriented so said asymmetric deformation occurs in the same direction (Figure 2).

Regarding claim 9, it is noted that Wang also shows a plurality of elongate members (14) extending between the pair of endplates and radially spaced apart from the central tube such that the elongate members and said pair of end plates are rotatable about the central tube.

Regarding claim 10, it is noted that Wang also shows a plurality of said wire loops (16) about the central tube and said elongate member.

Regarding claim 11, it is noted that the method for generating torque would be inherent and obvious since the prior art references meet the structural limitations of the claimed device.

***Information on How to Contact USPTO***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D Le whose telephone number is (703) 305-0156. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

May 22, 2003

A handwritten signature in black ink, appearing to read "Dang D. Le". The signature is fluid and cursive, with the first name "Dang" and last name "Le" clearly distinguishable.

DANG LE  
PRIMARY EXAMINEE